Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class Period \_\_\_\_\_\_

Painting Towers: Multiple Representations

**Functions**  A function states the relationship between two quantities. In the “Painting Towers Problem” the number of faces to paint depends on the number of cubes in the tower. If we let represent the number of faces to paint, then is called the *dependent* variable. The dependent variable goes on the vertical axis of a graph. If we let represent the number of blocks in the tower, then is called the *independent* variable and goes on the horizontal axis of a graph.

**Painting Towers - Multiple Representations** We can represent, or describe, functions using pictures, words, tables, equations of two variables, and graphs.

PICTURE WORDS

1. Describe how to determine the number of faces

to paint in a tower of any number of blocks.

EQUATION

2. Let represent the number of faces to paint and represent the number of blocks in a

tower and write an equation of two variables that describes how to determine the number

of faces to paint in a tower of any number of blocks.

TABLE GRAPH

3. Complete the table. 4. Complete the Graph.

|  |  |
| --- | --- |
| Number of Blocks | Faces to Paint |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 5 |  |
|  | 29 |
| 24 |  |

Can you use a pattern to find the 0-step?

**Thinking about the “Painting Towers” Function**

5. Use the picture representation of the “Painting-Towers” function to explain why the points

on the graph “line up”.

6. How does the number of faces to paint grow each time a block is added to the tower?

Use a pink highlighter or colored pencil to show this growth rate on each representation,

(picture, words, equation, table, and graph).

7. Plot the point on the graph. What does this point represent in this context?

8. Plot the point on the graph and place the ordered pair on the table.

What does this point represent in this context? Use a yellow highlighter or colored pencil

to show this point on each representation, (picture, words, equation, table, and graph).

**Painting Towers 2 – Multiple Representations**

PICTURE WORDS

9. Describe how to determine the

number of faces to paint in

towers of rows of 2 blocks

EQUATION

10. Let represent the number of faces to paint and represent the number of rows of two

blocks and write an equation of two variables that describes how to determine the

number of faces to paint in a tower of any number of rows.

TABLE GRAPH

11. Complete the table. 12. Complete the Graph.



|  |  |
| --- | --- |
| Number of Rows | Faces to Paint |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
|  | 44 |
| 25 |  |

**Thinking about the Painting Towers 2**

**Function**

13. Why do the points on the graph

line up?

14. Should you connect the points

on the graph?

15. How does the number of faces to paint grow each time you add a row to the tower?

Use a pink highlighter or colored pencil to show this growth rate on each representation,

(picture, words, equation, table, and graph).

16. Plot the point on the graph and place the ordered pair on the table.

What does this point represent in this context? Use a yellow highlighter or colored pencil

to show this point on each representation, (picture, words, equation, table, and graph).